

CLAIMS

1. Method for coating the surface of a metal material having a crystallographic structure, according to which the material is first coated with a layer of a metal or a metal alloy having a melting point equal to T_f and a thickness less than or equal to $2.5\mu\text{m}$, characterised in that:

- the first coating is subjected to thermal processing using a rapid heating means in order to bring the surface of the first coating to a temperature of between $0.8T_f$ and T_f ;
- a second coating is deposited from a metal or a metal alloy having a thickness less than or equal to $1\mu\text{m}$.

2. Method according to claim 1, characterised in that the first and second coatings have melting points less than or equal to 700°C .

3. Method according to claim 1 or 2, characterised in that the first and second coatings are constituted by the same material.

4. Method according to any one of claims 1 to 3, characterised in that a transparent mineral film is then deposited on the second coating.

5. Method according to any one of claims 1 to 4, characterised in that the metal material to be coated is a carbon steel.

6. Method according to any one of claims 1 to 4, characterised in that the metal material to be coated is a stainless steel.

7. Method according to any one of claims 1 to 4, characterised in that the metal material to be coated is aluminium or one of the alloys thereof.

8. Method according to any one of claims 1 to 7, characterised in that the first coating is produced by means of electrodeposition.

9. Method according to any one of claims 1 to 7, characterised in that the first coating is produced by a physical vapour deposition method.

10. Method according to any one of claims 1 to 9, characterised in that the means for rapid heating is an infra-red heating device.

11. Method according to any one of claims 1 to 9, characterised in that the means for rapid heating is an induction heating device.

12. Method according to any one of claims 1 to 9, characterised in that the means for rapid heating is a device for discharge with plasma with a non-reactive gas.

13. Method according to any one of claims 1 to 9, characterised in that the means for rapid heating is a device for ion bombardment with a non-reactive gas.

14. Method according to any one of claims 1 to 13, characterised in that the second coating is produced by means of electrodeposition.

15. Method according to any one of claims 1 to 13, characterised in that the second coating is produced by means of a physical vapour deposition method.

16. Method according to any one of claims 4 to 15, characterised in that the transparent mineral film is deposited by means of a reactive plasma assisted chemical vapour deposition method.

17. Method according to any one of claims 1 to 16, characterised in that the first and/or second coating(s) is/are constituted by tin.

18. Method according to any one of claims 1 to 17, characterised in that the first and/or second coating(s) is/are constituted by aluminium.

19. Method according to any one of claims 1 to 18, characterised in that the mineral film is constituted by a metal oxide or a mixture of metal oxides.

20. Method according to claim 19, characterised in that the metal oxide(s) is/are selected from the oxides of austenitic stainless steel, chromium, titanium, silicon, zinc, tin.

21. Method according to any one of claims 1 to 20, characterised in that the metal material is in the form of a moving strip, and in that the various method steps are carried out continuously by means of installations which are arranged successively over the path of the moving strip.

22. Device for coating a metal material in the form of a strip, characterised in that it comprises means for moving

the strip and, arranged successively over the path of the strip:

- first means for coating the strip with a layer of a metal or a metal alloy having a melting point equal to T_f ;
- means for rapidly heating the strip which can bring the surface of the layer to a temperature of between $0.8T_f$ and T_f ;
- and
- second means for coating the strip with a layer of metal or metal alloy.

23. Device according to claim 22, characterised in that it comprises, downstream of the second means for coating the strip with a layer of a metal or a metal alloy, means for coating the strip with a transparent mineral film.

24. Metal material, characterised in that it comprises, on at least one of the surfaces thereof, a metal coating having a three-dimensional visual effect, the coating being formed directly on the surface of the material.

25. Metal material according to claim 24, characterised in that it is produced using the method according to any one of claims 1 to 21.